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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,726	12/11/2003	Yusuke Igarashi	14225-032001 / F1030573US	8575
26211	7590	12/15/2004	EXAMINER	
FISH & RICHARDSON P.C. CITIGROUP CENTER 52ND FLOOR 153 EAST 53RD STREET NEW YORK, NY 10022-4611			PAREKH, NITIN	
			ART UNIT	PAPER NUMBER
			2811	

DATE MAILED: 12/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/733,726

Applicant(s)

IGARASHI ET AL

Examiner

Nitin Parekh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 October 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 10-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant's election without traverse of Group I, claims 1-9, in Paper No. 3 is acknowledged.

Drawings

2. Figures 14 and 15 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3-6, 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art (APA) in view of Glenn (US Pat. 6143981).

Regarding claims 1, 3, 4, 6 and 8, the APA (see Fig. 15) discloses a circuit device comprising:

- conductive patterns (81 in Fig. 15) separated by separation groove (87 in Fig. 15)
- a circuit element (82 in Fig. 15) affixed onto the conductive pattern, and
- an insulating resin (83 in Fig. 15) covering the circuit elements and the conductive patterns and filling the separation grooves while exposing the rear surfaces of the conductive patterns and a part of the side surface of the conductive patterns being exposed from the insulating resin

(Fig. 15; specification pp. 2-4).

The APA fails to teach a constricted part being formed at side surface of the separation groove and the insulating resin being adhered to the constricted part.

Glenn teaches a resin sealed/encapsulated package (Fig. 1-3) where a die pad and conductive tabs/patterns have side surfaces having a variety of etched profiles including a profile with a constricted part (see 34 in Fig. 3) having a rough surface being formed continuously on/across the side surfaces at the separation region between the die pad and the conductive tabs/pattern so that adhesion and bonding with the encapsulant is improved (Col. 4, lines 31-56).

It would have been obvious to a person of ordinary skill in the art at the time invention was made to incorporate the constricted part being formed at side surface of

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the separation groove and the insulating resin being adhered to the constricted part as taught by Glenn so that the adhesion and bonding with the resin can be improved and delamination related defects can be reduced in the APA's device.

Regarding claims 5 and 9, forming the grooves do not distinguish over the APA and Glenn, because only the final product/structure is relevant, not the process of forming the groove such as "etching", "drilling" or "sputtering". Note that a "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and *In re Marrosi et al.*, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear. See also MPEP 706.03(e).

Regarding claims 5, 6 and 9, forming the grooves do not distinguish over the APA and Glenn, because only the final product/structure is relevant, not the process of forming the groove such as "etching a plurality of times", "drilling or sputtering intermittently" or "wet etching single time using different etchants". Note that a "product by process" claim

is directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ 161; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and In re Marrosi et al., 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear. See also MPEP 706.03(e).

5. Claims 2 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over the APA and Glenn (US Pat. 6143981) as applied to claim 1 above, and further in view of Yamaguchi (US Pat. 5157475).

Regarding claims 2 and 7, the APA and Glenn teach the entire structure as applied to claim 1 above, except the thickness of the conductive patterns being thicker than the width of the separation groove.

Yamaguchi teaches a resin sealed package (Fig. 5a/5b) having a die support/pad and leads/conductive patterns (52 and 54 in Fig. 5b) where the leads/conductive patterns are thicker than the width of the spacing/separation groove between the die

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support/pad and the leads (see 54/54a/54b versus the spacing between 52 and 54 in Fig. 5b; Col. 4).

Furthermore, the determination of parameters such as shape and dimensions of the conductive leads, die pad, etc., including the thickness and width, spacing between the leads and the die pad, thickness of the resin, etc., in chip scale packaging is a subject of routine experimentation and optimization to achieve the desired adhesion/bonding, rigidity and mechanical strength, reduced cracking/delamination and improved reliability.

It would have been obvious to a person of ordinary skill in the art at the time invention was made to select the thickness of the conductive patterns being thicker than the width of the separation groove as taught by Yamaguchi so that the rigidity and mechanical strength can be improved in Glenn and APA's device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nitin Parekh whose telephone number is 571-272-1663. The examiner can normally be reached on 09:00AM-05:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9318.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

NP

12-10-04



NITIN PAREKH

PRIMARY EXAMINER

Technology Center 2800